CLAIMS:

1.   A method for analyzing pulmonary three-dimensional CT data, wherein
the three-dimensional CT data include a plurality of two-dimensional slice images
consisting of image elements, wherein values of the image elements correspond to
Hounsfield units, the method comprising the steps of: loading the three-dimensional CT
5   data; and performing a detection of ground glass opacities in the plurality of two-
dimensional slice images of the three-dimensional CT data on the basis of a texture
analysis.

2.   The method of claim 1, wherein the texture analysis includes the step of:
10   determining a typical Hounsfield value of a local pulmonary parenchyma on the basis
          of
a peak of a texture based roughness-histogram.

3.   The method of claim 1, wherein the texture analysis includes the steps
15   of:
computing a typical parenchyma Hounsfield value for the lung; and marking all areas in
the lung area with a Hounsfield value higher than the typical parenchyma Hounsfield
value.

20   4.   The method of claim 1, wherein the texture analysis includes the steps
of:
determining first image elements in the plurality of two-dimensional slice images
belonging to the lung by performing a segmentation of the lung from in the plurality of
two-dimensional slice images; and determining second image elements from the first
25   image elements; wherein the second image elements belong to a solid structure.

5.   The method of claim 4, wherein the determination of the second image

elements belonging to a solid structure includes the steps of: a) determining a third starting image element of the first image elements; b) determining 8 directly neighbouring image elements for the third starting image element; c) determining a fourth image element of the 8 directly neighbouring image elements having the highest

5 Hounsfield value; d) choosing the fourth image element having the highest Hounsfield value as new third starting image element and iteratively repeating steps a) to d).

6.　　　　　The method of claim 4, wherein the texture analysis includes the steps of:

10 determining fifth image elements which are part of the first image elements but not part of the second image elements. Sampling sixth image elements in a neighbourhood of each of the fifth image elements; determining a roughness histogram on the basis of the fifth and sixth image elements; accumulating the roughness histogram; determining a peak value of a peak in the accumulated roughness histogram; entering the peak value

15 into a list structure in case the value exceeds a Hounsfield value of approximately –700 HU; and determining ground glass opacities in the lung from pulmonary three-dimensional CT data on the basis of the list structure.

7.　　　　　Image processing device, comprising: a memory for storing pulmonary

20 three-dimensional CT data, wherein the three-dimensional CT data include a plurality of two-dimensional slice images consisting of image elements, wherein values of the image elements correspond to Hounsfield units; and an image processor for analyzing the pulmonary three-dimensional CT data, which image processor is adapted to perform the following operation: loading the three-dimensional CT data; and performing a

25 detection of ground glass opacities in the plurality of two-dimensional slice images of the three-dimensional CT data on the basis of a texture analysis.

8.　　　　　The image processing device of claim 7, wherein the texture analysis includes the following operation: determining a typical Hounsfield value of a local

30 pulmonary parenchyma on the basis of a peak of a texture based roughness-histogram.

9.　　　　　The image processing device of claim 7, wherein the texture analysis

includes the following operation: computing a typical parenchyma Hounsfield value for the lung; and marking all areas in the whole lung area with a Hounsfield value higher than the typical parenchyma Hounsfield value.

5 10.   Computer program for analyzing pulmonary three-dimensional CT data, wherein the three-dimensional CT data include a plurality of two-dimensional slice images consisting of image elements, wherein the image elements correspond to Hounsfield units wherein, when the computer program is executed on a computerized image processing device, the computer program causes the computerized image

10 processing device to perform the following operation: loading the three-dimensional CT data; and performing a detection of ground glass opacities in the plurality of two-dimensional slice images of the three-dimensional CT data on the basis of a texture analysis.